# MINE HEALTH INSPECTION PROCEDURES

## NOISE

## COAL AND METAL/NONMETAL

# PURPOSE

- ✓ Conducting Noise Sampling
- ✓ Evaluating Sample Results
- ✓ Implementing P-Code Policy
- ✓ Verify operators are in compliance with the noise standard
- ✓ Discuss technologically achievable engineering and administrative controls

# A.&B. Noise Sampling Equipment

- Sample for FULL SHIFT using a personal noise dosimeter -
- Properly placed on the miner's shoulder.
- All Quest dosimeters must be set to parameters in Table 1. Quest Q-200, Q300, & Noise Pro DL personal noise dosimeters:
  - Have multiple internal dosimeters; Nos. I, II & III.
- Dosimeters and acoustical calibrators are required to be calibrated annually. Strictly adhere to the schedule to assure all dosimeters and calibrators are properly calibrated.

# TABLE 1

## Quest Parameter Settings

| Measurement Parameter | Value | | (If Applicable) |
|---|---|---|---|
| | Dosimeter I | Dosimeter II | Dosimeter III |
| | (Action Level) | (PEL) | (PEL) |
| Calibration (CA-10) | 114 | 114 | 114 |
| Range | HI | HI | HI |
| UL (Upper Limit Level) | 117 | 117 | 117 |
| CL (Criterion Level) | 90 | 90 | 90 |
| ER (Exchange Rate) | 5 | 5 | 5 |
| TL (Lower Threshold Level) | 80 | 90 | 90 |
| Fast/Slow (Response Time) | Slow | Slow | Slow |
| A/C (Frequency Weighting) | A | A | A |

After initial setup, Tech Support personnel will confirm the settings for Quest dosimeters during annual calibration and LOCK the codes in place. This will prohibit the settings from inadvertently being changed in the field.

# C. Noise Sampling Strategy

## 1-3. Identify Miner(s) to be Sampled

Considerations Include:

- High Risk Occupations;
- Exposure Conditions at the Time of Inspection;
- Prior Sampling History at the Mine;
- Reading of SLM or personal noise dosimeters; and,
- Any Other Information Such as the Mine's Sampling Records.

At a minimum, miners who have the greatest risk of overexposure to noise should be identified and sampled.

# D. Pre-Inspection and Post-Inspection Procedures

- **MUST review MSHA records prior to beginning the inspection at the mine! Such as:**
  - **Previous Inspection Reports;**
  - **Previous Noise Technical Investigation results;**
  - **Listing of assigned P Codes (see Section N for description of P Codes); and,**
  - **The Uniform Mine File (Mine File).**

# Before Taking Each Sample….

- Check the calibration label on the dosimeter and calibrator to ensure they have been calibrated within the past 12 months.
  - Note on the 2000-84 in comments section
- Conduct a field calibration check before and after EACH sampling shift. Document on MSHA Form 2000-84
  - If check indicates dosimeter is more than +/- 1.0 dB of the calibrator, with either calibration check, the instrument or sampling results must not be used.
  - Procedural instructions for checking calibration of the instruments are contained in Appendix 1.

# After Arriving at ANY Mine…….

The mine inspector must review:

- All posted administrative controls; and, during the inspection, determine if they are being followed; and,
- Any engineering controls put into place must also be checked to determine if they are being maintained.

Document this information in the notes.

# E. Sampling Inspection Procedures

## 1. Instructions to the Miner

### a. Explain to the miner -

- What you're doing;
- What the sampling device does; and,
- Reason for the sampling (i.e., the hazard).
- Emphasize that the personal noise dosimeter or sound level meter is not a tape recording device.

# E. Sampling Inspection Procedures

## 2. Dosimeters

- Take noise exposure measurements in accordance with the instrument manufacturer's recommendations.
  - This requires the dosimeter microphone to be located at the top of the shoulder ;
  - Midway between the neck and end of the shoulder ; and,
  - With the microphone diaphragm pointing in a vertical upward direction.
  - The microphone must be located on the shoulder that is normally between the principal noise source and the miner's ear (see Figure 1).

Figure 1. Placement of the dosimeter microphone.

To the extent practical, the dosimeter and microphone cable must be positioned underneath exterior clothing to minimize potential safety problems and damage to the instrument. The microphone must not be covered by clothing. A wind screen should be used at all times.

- The dosimeter must be worn by the miner whose exposure is being measured for an entire normal work shift……,
  - Even if the normal work shift is in excess of 8 hours.
- Sample ONLY when conditions are judged to be:
  - NORMAL and REPRESENTATIVE.
- If unusual conditions arise during the sampling period then the sample may have to be VOIDED.
- Resampling must be conducted as soon as possible.

- During each full-shift sample, inspector must observe the miner being sampled as frequently as is necessary to determine that a representative sample of the normal activities is being conducted.
- Inspector must observe enough of the work activity to ensure that:
  1. Dosimeters remain in the environment being sampled;
  2. Dosimeters are properly positioned or placed on the miner for sampling;
  3. Dosimeters are not damaged;
  4. Normal mining activities are taking place;

5. A determination of production is made;
6. Noise controls (including administrative controls) are documented, etc.

- Inspectors normally accompany miners out of the mine.

# F. Inspection Documentation – Coal

1. **Observations that MUST be described in the field notes:**
   a. Administrative noise controls posted on the mine bulletin board. Detail whether they were followed during the sampling and if a copy was provided to affected miner(s).
   b. A miner refusing to wear a dosimeter.
   c. Interruptions in the sampling requiring the dosimeter to be placed in the "PAUSE MODE" (i.e., miner leaving mine property).
   d. Factors requiring a sample to be voided. (Includes information from the miners being sampled.)

# F. Inspection Documentation – Coal

e. The sources of noise for the miner(s) being sampled.

f. Engineering noise controls being utilized that could affect the dose of the miners being sampled; their condition and state of maintenance.

g. If a citation is being issued, list feasible noise controls not being used to reduce the affected miner(s) dose or any other action or inaction causing the citation to be issued. (Refer to PIB 04-18.)

h. During follow-up sampling on an existing citation, detail the noise controls implemented during the abatement period.

# F&I. Inspection Documentation /Reporting – Coal

2. An MSHA Form 7000-10P, June 93 (Revised), Noise note page must be completed during an inspection when sampling.
3. Complete the latest MSHA Form 2000-84 for each inspection where noise samples are conducted and review the information for clarity, legibility, and accuracy. Within 30 calendar days from completion of the sample, the data on the Form 2000-84 must be entered into the Coal Noise Sampling Database at either the field office or the district office.

# K. Determination of the Feasibility of Noise Controls

- For a noise overexposure greater than or equal to 132% of the permissible dose a feasibility determination must be made *prior* to issuing a citation for lack of controls.

*Feasibility = Technological and/or Administrative Achievability + Economic Achievability*

# K. Determination of the Feasibility of Noise Controls

## THE PROCESS

1. Determine the miner (s) dose is over the PEL
2. Describe noise sources and the condition and use of controls in the notes
3. Using the list of controls in PIB 04-18 for noise sources describes in 2.
   - Determine which are achievable in this situation
4. If all achievable controls are determined to be properly selected, installed, used, and maintained, or there are none, do not issue a citation for lack of controls, rather, initiate the P-Code process
   - See PIB 04-5, "Basis for Assigning a P-Code for Noise Overexposure

# K. Determination of the Feasibility of Noise Controls

5. When all achievable controls have NOT been implemented in this situation, determine whether the controls are economically achievable in this particular situation
   a. A reasoned estimate of the cost of the control under consideration.
   b. The nature and extent of the noise exposure.
   c. A comparison of cost estimates for original equipment, replacement, retrofit, and/or repairs.
   d. Estimated costs of abatement would be reasonable to achieve benefits

# K. Determination of the Feasibility of Noise Controls

When determining economic achievability

- Is the cost of the controls wholly out of proportion to the reduction in noise exposure expected by their implementation?

6. If a technologically achievable or administratively achievable control is extremely costly for the operator but the expected reduction in noise exposure is minimal, it may be determined that it is not economically achievable for the operator to install the control

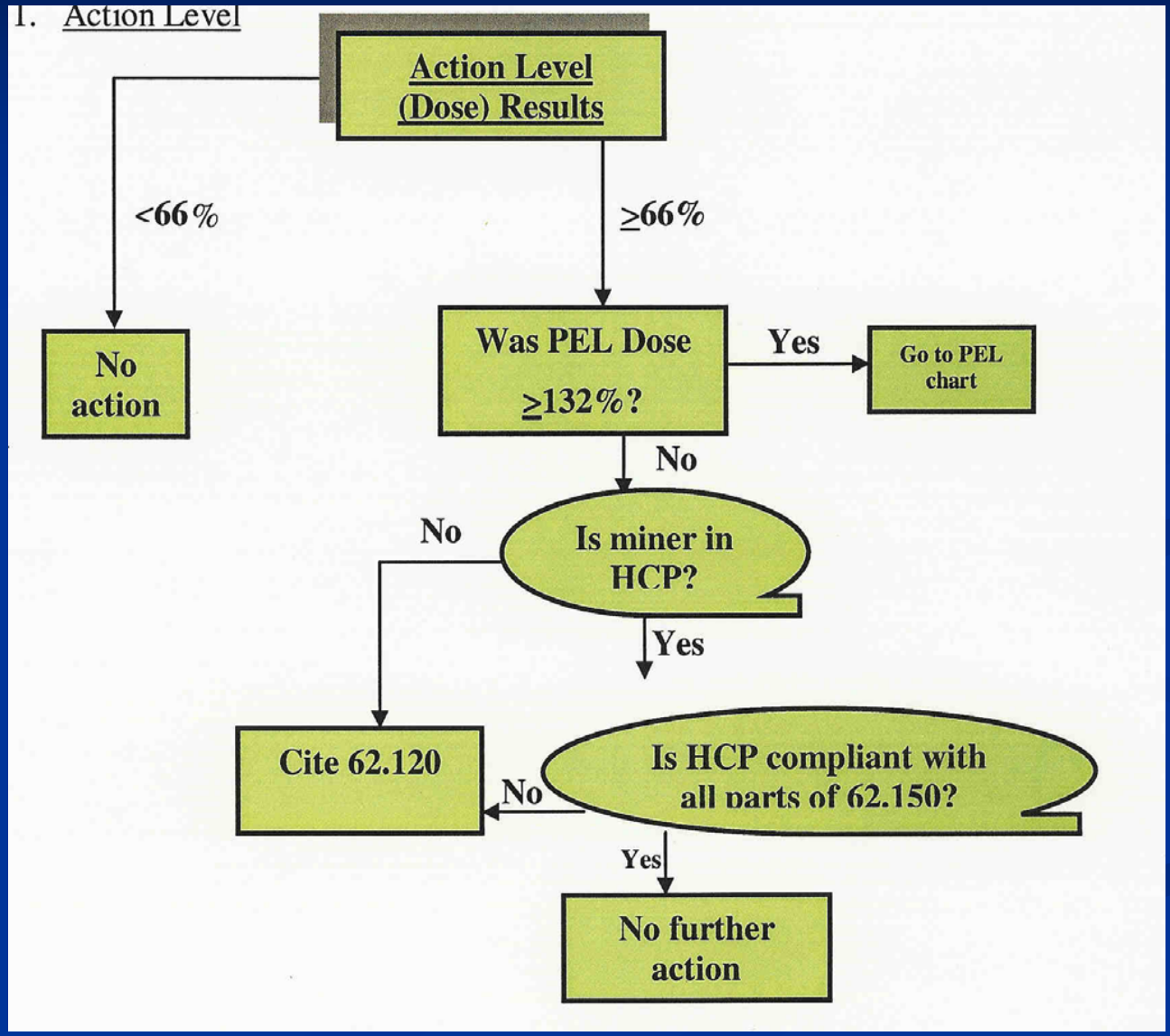
# K. Determination of the Feasibility of Noise Controls

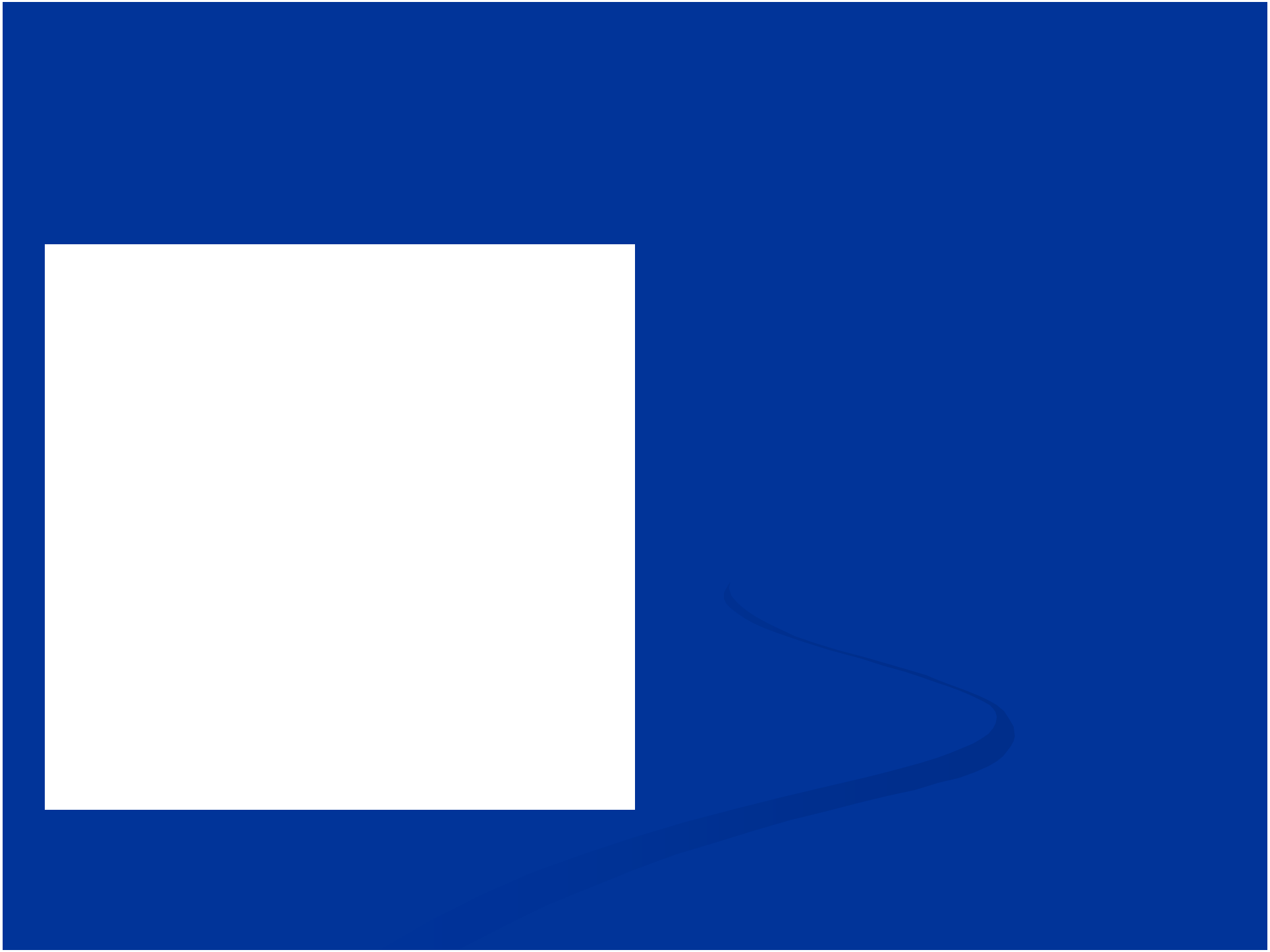
7. If a control is both technologically achievable or administratively achievable and economically achievable, then it is feasible for implementation by the mine operator.
8. Once feasibility (economic and technological or administrative achievable) is established for controls not in place, then issue the citation for the overexposure and set an abatement period.
9. Once all feasible controls are implemented and sampling indicates continued overexposure, proceed to a P-Code. (See Appendix 6, PIB 04-5, "Basis for Assigning a P-Code for Noise Overexposure.")

# K. Determination of the Feasibility of Noise Controls

In some cases, it will be necessary to seek supervisory guidance when making the decision whether to require a control. Consultation is strongly encouraged. Follow the district procedures for consulting with the field office supervisor, district staff, Division of Health or Technical Support staff for advice. Inform the operator or contractor that a miner's noise exposure is at a citable level and a citation could be issued at a later date.

# L. Compliance Determination






Cite
62.140
Set Abatement
Period